focus is employed, the multiple images become blurred and indistinct. The appearance ultimately presented is that of a band of light crossed by a very large number—probably 400 or 500—of hazy dark lines at right angles to its length. These might be produced by some structure in or near the crystalline lens or the cornea composed of elements measuring about $\frac{1}{2000}$ inch in length or breadth.

I do not know of any simple structure sufficiently coarse-grained to account for the images of which 25, or thereabouts, occur in a row. The mesh of a network which would explain these should be about $\frac{1}{125}$ inch (0·2 mm.) in length, and nothing of the kind is, I believe, to be found in the eye. Probably, however, the effect is a composite one, like that of the two pieces of gauze used in photographing the lamp. If light passed through two superposed nets having fine meshes, dark bands would generally be produced, which would take the form of a network of a coarser mesh than those of the nets themselves—possibly much coarser, as would be the case if the two nets were nearly alike in structure.

SHELFORD BIDWELL.

NEW STAR IN SAGITTARIUS.

A CIRCULAR (No. 42) from the Harvard College Observatory, informs us of the detection of a new star in the constellation Sagittarius by Mrs. Fleming, during the examination of the Draper Memorial photographs. The date of appearance is not yet definitely determined, but was either in the latter part of the year 1897 or the early part of 1898. The approximate position for 1900, as found from the Durchmusterung Chart of the region, is

R.A. = 18h. 56m. 12·2s. Decl. = −13° 18′ 16″.

The star was too faint to be photographed on eighty-seven plates exposed during the period 1888 September 5 to 1897 October 23, even though the last of the plates taken in 1897 showed stars down to the 15th magnitude, the instrument being the 24-inch Bruce telescope at Arequipa. The Nova first appears on eight plates taken in March and April of last year—four at Arequipa with the 8-inch Bache telescope and four at Cambridge, Mass., with the 8-inch Draper telescope, both of these instruments being provided with prisms outside the objectives. It may be added that both the lenses are doublets. The estimated magnitudes are from comparisons with adjacent stars, and are to be regarded as approximate, as the star was away from the centre of plate in several cases. On March 8, 1898, the magnitude is given as 4·7; while on April 29, 1898, it is 8·2.

The Nova has of course been detected from the peculiarity of its spectrum, which consists chiefly of bright lines. The best photograph was obtained on April 19, 1898, with an exposure of sixty minutes, the magnitude of the star then being 8·2. The spectrum, 3 mm. in length, shows the lines H_β, H_γ, H_δ, H_ϵ, H_ζ, H_η, and probably H_θ, due to hydrogen, *bright*. A *broad* band at λ 4643 is also bright, and *narrow* bright lines are present at λλ 4029, 4179, 4238, 4276, 4459, and 4536, these latter appearing to be identical with lines at corresponding positions in the spectrum of Nova Aurigæ. The strongest dark line is at λ 4060. As in the Novæ Persei, Aurigæ, Normæ, and Corinæ, the line H_ϵ is *bright;* while in variables of long period this line is always *dark*, being possibly obscured by the neighbouring broad calcium line H. This difference may serve to distinguish between Novæ and variables. The accompanying dark lines on the more refrangible edges of the bright bands of Novæ Aurigæ, Normæ, and Corinæ are not visible in the spectrum of Nova Sagittarii. The calcium line K is also invisible. In the photograph obtained two days later—1898 April 21—certain marked differences are noted. The broad dark line λ 4060 has disappeared, and a narrow bright line appears at λ 5005, possibly identical with the chief nebula line at λ 5007. The hydrogen lines appear to be narrower and more intense.

Plates exposed at Arequipa on October 7 and 8, 1898, but not yet examined, will furnish important information as to the rate of diminution of the light of the Nova. On the morning of March 13 of this year, Prof. O. C. Wendell examined the star with the photometer at Cambridge, and found that its magnitude was then 11·37. Visual examination showed its light to be nearly mono chromatic, with a faint continuous spectrum, in this respect resembling other Novæ that have preceded it, in having changed to a gaseous nebula. This change had evidently begun at the time of the photograph taken on 1898 April 21, showing the line λ 5005.

It is interesting to note that of the six new stars which have been discovered since 1885, five have been found by Mrs. Fleming during her detailed examinations of the Henry Draper Memorial photographs of stellar spectra.

During the last four hundred years fifteen stars have appeared which may be regarded as Novæ, and, in general, have been found in the vicinity of the central line of the Milky Way, their average galactic latitude being about 11°·2. Nova Andromedæ and Nova Centauri showed no bright lines in their spectra, and, if these be excepted, the average galactic latitude of the remaining thirteen is 9°·0. Of these Nova Coronæ is the only new star with bright lines in its spectrum which has appeared far from the central line of the galaxy, its latitude being 46°·8. If this also be excepted, the average galactic latitude of the other twelve is reduced to 5°·8. It is thus to be inferred that there is some association between the galaxy and the new stars whose spectra contain bright lines, as the probability that such a distribution is due to accident is extremely small.

FRANZ RITTER VON HAUER.

A DISTINGUISHED Austrian geologist has passed away in the person of Dr. Franz Ritter von Hauer, the Intendant of the Royal Imperial Natural History Museum of Vienna. Von Hauer was born in Vienna on January 30, 1822, and received his education partly in that city, and subsequently at the mining academy of Schemnitz. In 1846 he became assistant to Wilhelm von Haidinger, who was then councillor of mines and lecturer on mineralogy in Vienna. Later on, in 1849, when Von Haidinger was appointed director of the then newly-established Imperial Geological Institute, Von Hauer was engaged as geologist, and he took a leading part in the work of the survey, succeeding to the post of director on the retirement of his chief in 1866.

Among his special geological works, those on the Cephalopoda of the Triassic and Jurassic formations of eastern Alpine regions are the most numerous and important; but he contributed other papers and works on mineralogy and applied geology.

His most important general work was that of the geological map of the Austro-Hungarian monarchy, which was issued in twelve sheets, 1867–71, and of which a fourth edition, including Bosnia and Montenegro, was published in 1884. His explanatory pamphlets relating to this great map have been described as "models of concise description," while his general manual of Austrian geology, published in 1875, "is the best guide we have to some of the most interesting parts of Central and Eastern Europe." The remarks quoted were made by Mr. R. Etheridge in 1882, when as president of the Geological Society he forwarded to Von Hauer the

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Wollaston Medal, which was then awarded to him by the Council. Von Hauer had been elected a foreign member of the Society in 1871. In 1886 he was appointed Intendant of the Natural History Museum at Vienna, and since 1892 he has been a life-member of the upper house of the Austrian parliament. He died on March 20, aged seventy-seven.

NOTES.

At a meeting of members of the Royal Institution on Monday, it was announced that the Hodgkins Medal, the first gold medal for scientific work ever given by the Smithsonian Institution, has been conferred upon Prof. J. Dewar, F.R.S., in recognition of his researches on the liquefaction of air.

Mr. A. P. Trotter (at present Government electrical engineer for Cape Colony), has been appointed electrical adviser to the Board of Trade, in succession to Major Cardew, who has resigned.

A French warship, upon which experiments in aerial telegraphy will be made, has arrived at Calais, and the experiments will be carried out between different points in the English Channel and the South Foreland. The French Government have under consideration the question of adopting the system generally for use in the navy. It is reported that the Wireless Telegraphy Company have been approached by the representative of a proposed syndicate, which desires to acquire the sole rights of establishing wireless telegraphic communication between England and America.

The Rotterdam correspondent of the *Times* reports that the seventh Dutch Physical and Medical Congress opened on Friday, April 7, at Haarlem. Though it is a national institution the Congress is entertaining a foreign guest, Prof. Ramsay. On Thursday evening, in an address on the merits of Haarlem as a home of science, Prof. Bosscha, the director of Teyler's Museum, mentioned Kirschhuyzen, the humble teacher of mathematics whose manual of algebra was translated into Latin by Newton. Prof. Bosscha, in opening the Congress on Friday, reviewed the progress that science has made in this century, and dwelt especially on the researches of Lord Kelvin. In one of the sections Prof. Ramsay delivered an address on recent researches, and at the end the audience gave him enthusiastic applause.

During the months of March and April a public conference is being held at the Botanical Institute at Rome, under the presidency of Prof. Pirotta, on the Nutrition of Plants.

Dr. L. Buscalioni has set out for a lengthy botanical expedition to Brazil, especially to the little known affluents of the Amazon. The collections will be forwarded to the Botanical Museum at Rome.

We learn from the *Journal of Botany* that Mr. I. H. Burkill has been appointed assistant to the Director of Kew Gardens, and that Mr. C. C. H. Pearson has joined the Kew staff as assistant for India.

We regret to have to report the death of two distinguished diatomists—Surgeon-Major G. C. Wallich, M.D., who died in London on March 31, in his eighty-fourth year, and Count Abbé F. Castracane, of Rome. Dr. Wallich and Count Castracane were, with one exception, the two oldest Honorary Fellows of the Royal Microscopical Society.

Sir William Jenner, who died on December 11, 1898, bequeathed 10,000*l.* to the Royal College of Physicians of London. The bequest will, however, only take effect in default of appointment being made by Lady Jenner of the ultimate residue of the estate, if any, after the principal legacies have been provided.

The death is announced of Dr. P. L. Rijke, of the University of Leyden, at eighty-six years of age, and of Dr. Oliver Marcy, professor of natural history in North-Western University, Evanston, U.S.A.

It is announced in *Science* that the report that Dr. T. J. J. See has been designated Chief of the U.S. Nautical Almanac Office is incorrect.

The Imperial Academy of Sciences, St. Petersburg, celebrates to-day the fiftieth anniversary of the foundation of the central physical observatory.

The London Geological Field Class, conducted by Prof. H. G. Seeley, F.R.S., will commence their annual series of Saturday afternoon excursions on April 22. Full particulars can be obtained from the Hon. Secretary, Mr. R. Herbert Bentley, 43 Gloucester Road, Brownswood Park, N.

The death is announced of Mr. Joseph Stevens, for some years honorary curator of the Reading Museum. Mr. Stevens was a Berkshire man, having been born at Stanmore in that county on April 14, 1818. After qualifying for the medical profession he settled in the village of St. Mary Bourne, in the Test valley between Andover and Highclere in Hampshire. Here he devoted himself largely to archæological subjects, and gave considerable attention also to geology. In 1867 he published, in pamphlet form, "A Descriptive List of Flint Implements found at St. Mary Bourne; . . . with a sketch of the geological features of the upper Test valley, and a list of fossils from the upper and lower Chalk," &c. He was the author of other papers on similar subjects. He died on April 7, at the age of eighty-one.

The Easter dredging expedition of the Liverpool Marine Biology Committee was brought to an untimely end by an unfortunate boat accident in Port Erin Bay. On March 31 dredging and trawling were carried on from the Fisheries steamer *John Fell*, and on the following forenoon the Tanner closing net and the method of pumping plankton from the bottom by means of a hose-pipe were tried on the steamer. On the afternoon of Saturday, April 1, two of the workers in the Biological Station went out to collect surface plankton in a small boat. While hauling in the tow-net when returning, the boat capsized, and both were thrown into the water. One of them (Mr. E. J. W. Harvey, of Liverpool) was picked up by another boat from the Biological Station, but his companion (Mr. Eric T. Townsend, of Manchester) was unfortunately drowned before assistance could reach him. The body was eventually recovered. Mr. Townsend was a student of the Owens College, and was occupying the College work-table at the Port Erin Biological station.

The Belgian Royal Academy has issued its programme of subjects for essays in competition for gold medals of value 600 francs each, to be awarded in 1900. The essays are to be sent to the Secretary before August 1, 1900, each bearing a motto, and written in French or Flemish. Contrary to the usual custom, five subjects instead of three have been selected in each of the two departments of mathematical and physical science and of natural science. The mathematical and physical questions refer to (1) critical phenomena in physics; (2) viscosity of liquids; (3) the carbon derivatives of an element whose combinations are little known; (4) the history and theory of variation of latitude; (5) the algebra and geometry of n-linear forms where $n > 3$. The questions in natural science refer to (1) the geological formations at Comblain au Pont, and whether these are

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